REMARKS

Applicants request favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Claims 1-39 were pending in the application. Claims 1, 3, 5-21, 23-27, and 33-39 were rejected in the Office Action, whereas claims 28-32 were withdrawn from consideration. Applicants appreciate the Examiner's indication of allowable subject matter in claim 22. Claim 34 has been amended and claims 28-32 have been cancelled without prejudice or disclaimer. No new matter has been added. Claims 1, 3, 5-27, and 33-39 are presented for reconsideration.

Applicants appreciate the Interview with the Examiner on July 9, 2002 in which it was agreed that claim 34 could be amended to resolve antecedent basis issues related to claims 3, and 7-21, as later discussed herein. In addition, claim 1 was also discussed with respect to U.S. Patent No. 6,322,029 ("Azima"). For the reasons hereafter set forth, Applicants have decided not to amend claim 1.

1. Claims Directed to Non-Elected Subject Matter

The Examiner objected to the inclusion of claims 28-32 among the pending claims as they had previously been withdrawn from consideration. In response to this objection, claims 28-32 have been cancelled without prejudice or disclaimer.

2. Objection to Claims 3 and 7-21

The Examiner objected to claims 3 and 7-21 on the ground that the phrase "the vibration exciting system" lacked antecedent basis. In response to this objection, claim 34, *i.e.*, the claim from which claims 3 and 7-21 depend, has been amended to provide the necessary antecedent basis. Accordingly, the objection is now moot and should be withdrawn.

3. Rejections under 35 U.S.C. § 102(e)

a. Rejection of Claims 1, 3, 5-13, 17-21, 24-27, and 33-39

The Examiner rejects claims 1, 3, 5-13, 17-21, 24-27, and 33-39 under 35 U.S.C. § 102(e) as being anticipated by Azima. Applicants respectfully traverse this rejection.

i. Rejection of Claim 1, 5, 6, 24-27, and 33

Independent claim 1 (*i.e.*, the claim from which claims 5, 6, 24-27, and 33 depend) recites (with bold emphasis added): "wherein the vibration exciting system is adapted to apply **torsion** to the panel-form member." As previously defined, torsion involves the twisting of an object.[1] The Examiner argues that Azima (and in particular Figures 18-21 thereof) teaches each limitation of claim 1. Applicants respectfully disagree. With respect to Figures 18-21 Azima provides (with bold emphasis added):

> Regarding FIGS. 18 to 21, FIG. 18 shows a panel-form loudspeaker (81) generally similar to that of FIG. 1 and 2 and in which the distributed mode panel (2) is formed with a generally rectangular aperture (82) within its boundaries in which is mounted a second distributed mode sound radiating panel (4) with a resilient suspension (3) interposed between the respective panels. The panel (4) is constructed in the same manner as the panel (2), e.g. with a central core (22) separating skins (21). **The panel (4) is driven by its own transducer (9) mounted wholly and exclusively on or in the panel (4) at a predetermined location to produce a high frequency acoustic output, while the panel (2) is driven by a separate transducer (9) to produce an acoustic output of lower frequency**, so that the loudspeaker can readily encompass the whole acoustic spectrum.

Col. 34, lines 51-65. In addition, the transducers (9) are acting at different frequencies (one is a high frequency transducer and the other is a low frequency transducer) while being driven by a common amplifier (10). *See* col. 34, line 66 – col. 35, line 32. As a result of having a common amplifier (10) but different transducers (9), different signals must be sent to the transducers (9). As the signals sent to the transducers (9) differ, torsion can not be generated. Further, even if the signals were similar, they will not have the opposite polarity necessary to generate oppositely oriented forces that would yield torsion; rather the forces will be directed in the same direction normal to the panels. Finally, as the resilient suspension (3) is interposed between panels (2) and (4), it is neither possible nor intended for the two transducers (9) to work together to apply torsion to either of the panel members because they are effectively isolated from each other.

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[1] *See* Preliminary Amendment filed Feb. 5, 2002 at p. 8 (defining "torsion" as:

> **torsion. 1a.** The act of twisting or turning. **b.** The condition of being twisted or turned. **2.** The stress or deformation caused when one end of an object is twisted in one direction and the other end is held motionless or twisted in the opposite direction.

THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE: 4th Ed. (2000)).

During the Interview, the Examiner argued that although Azima may not explicitly provide that torsion will be applied to the panel, the reference (and, in particular, figure 1 thereof) implicitly teaches that torsion would be created due to the off-center positioning of the exciter 9 with respect to the frame 1. Specifically, the Examiner believes that in light of the off-center placement of the exciter (9), the resistance encountered by the exciter (9) will vary around its circumference thereby applying torsion to the panel (2). Applicants respectfully disagree.

The Examiner is correct in one respect: at frequencies below the resonant frequency of the exciter on the panel, the off-center placement may apply a small amount of torsion to the panel. However, the frequencies at which any such torsion may be applied are below the operating region of the panel when acting as "a loudspeaker," as recited in claim 1. At and above the resonant frequency (*i.e.*, at those frequencies at which the panel acts as "a loudspeaker"), any torsion previously created will disappear, because the exciter magnet will be decoupled from the panel. Therefore, Azima fails to teach or suggest applying torsion to the panel when the panel is operating as a loudspeaker.

Accordingly, as Azima fails to teach or suggest each limitation of claim 1, it can not be used to anticipate the claim under 35 U.S.C. § 102(e). Furthermore, as claims 5, 6, 24-27, and 33 depend from claim 1 (and, therefore, recite each of the limitations of claim 1), Azima also can not be used to anticipate these claims under § 102(e). For these reasons, Applicants earnestly solicit a withdrawal of the rejection of claims 1, 5, 6, 24-27, and 33 under § 102(e).

ii. Rejection of Claims 3, 7-13, 17-21, and 34-39

Independent claim 34 (*i.e.*, the claim from which claims 3, 7-13, 17-21, and 35-39 depend) recites (with bold emphasis added): "wherein the **suspension acts as a pivot**, thereby . . . causing nodal lines corresponding to the resonance of the panel-form member to move towards an edge of the member." The Examiner argues that Azima (and in particular Figures 18-21, 26, 28, and 30 thereof) teaches each limitation of claim 34. Applicants respectfully disagree.

The aforementioned discussion of Azima, Figures 18-21, is fully applicable here in which Azima provides that the loudspeaker arrangement of Figures 18-21 is similar to that of Figures 1 and 2. *See* col. 34, lines 51-53. Azima further provides that the panel-form loudspeaker of Figures 1 and 2 "comprises a rectangular frame (1) carrying a **resilient**

suspension (3) round its inner periphery which supports a distributed mode sound radiating panel." Col. 23, lines 28-32. "Resilient" is defined as: "(a) capable of withstanding shock without permanent deformation or rupture; (b) tending to recover from or adjust easily to misfortune or change. ***Syn*** elastic." WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY (1991). A resilient suspension readily compresses under the movement of the panel. By way of contrast, a suspension serving as a pivot must have a high shear stiffness, *i.e.,* it must not be resilient. *See* p. 9, lines 9-18 of the present application. Accordingly, as Azima teaches a resilient suspension, it teaches away from a suspension having a high shear stiffness which can function as a pivot.

As Azima fails to teach or suggest each limitation of claim 34, it can not be used to anticipate the claim under 35 U.S.C. § 102(e). Furthermore, as claims 3, 7-13, 17-21, and 35-39 depend from claim 34 (and, therefore, recite each of the limitations of claim 34), Azima also can not be used to anticipate these claims under § 102(e). For these reasons, Applicants earnestly solicit a withdrawal of the rejection of claims 3, 7-13, 17-21, and 34-39 under § 102(e).

b. <u>Rejection of Claims 1 and 23</u>

The Examiner rejects claims 1 and 23 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,901,231 ("Parrella") and, particular, by Figures 6 and 9-11 thereof. Applicants respectfully traverse this rejection.

With respect to Figures 6a and 6b, Parrella provides:

> FIGS. 6a and 6b illustrates [sic] a closed volume flat panel speaker which uses a thin panel 36 fitted with two piezoelectric elements 37, 38. The volume is closed from the back with a thin plate 39 and held together with four screws to a frame 40. A front view of the flat speaker 43 shows the location of the four screws *[41a, 41b, 42a, 42b]* and the location of the piezoelectric *[37, 38]*. The element *[38]* placed near the center excite predominately odd modes of vibration which produce the lower frequency pressures waves. The piezoelectric element *[37]* placed near the fixed corner will excite both even and odd modes and the combined effect of the two elements will result in a flatter frequency response. The panel is only fixed at the corners to provide a high degree of compliance. The four sides of the panel are sealed with a flexible cover, (thin plastic sheet or tape). This seal prevents self canceling of the pressure waves that wrap around the edges of the panel. The cavity is filled with a fiber glass insulation to dampen any cavity resonance.

Col. 4, lines 14-31. Although one of the piezoelectric elements 38 may produce odd modes of vibration whereas the other element 37 may produce even modes of vibration, there is no

teaching or suggestion of driving the piezoelectric elements 37, 38 out of phase with each other to generate torsion. Further, figures 9-11 and the discussion appurtenant thereto fail to provide a teaching or a suggestion of driving the piezoelectric elements 37, 38 to generate torsion, as recited in claim 1.

Accordingly, as Parrella fails to teach or suggest the torsion recited in claim 1, it can not be used to anticipate the claim under 35 U.S.C. § 102(e). Furthermore, as claim 23 depends from claim 1 (and, therefore, recites each of the limitations of claim 1), Parrella also can not be used to anticipate this claim under § 102(e). For these reasons, Applicants earnestly solicit a withdrawal of the rejection of claims 1 and 23 under § 102(e).

4. Rejections under 35 U.S.C. § 103(a)

The Examiner rejects claims 14-16 under 35 U.S.C. § 103(a) as being obvious when considering Azima in view of U.S. Patent No. 4,352,961 ("Kumada"). Preliminary, this rejection is improper under 35 U.S.C. § 103(c) as Azima (commonly owned) is no longer available as a reference against this application for purposes of rejecting claims under 35 U.S.C. § 103(a). By virtue of its new filing date, this CPA is now subject to the provisions of the American Inventors Protection Act, specifically 35 U.S.C. §103(c), which became effective November 29, 1999 and states:

> (c) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

However, as the corresponding PCT Application Serial No. WO97/09842 was published (and qualifies as prior art under 35 U.S.C. § 102(b)), this rejection will be treated as though it were made by combining the PCT Application in view of Kumada.

As previously mentioned, Azima fails to teach or suggest a suspension acting as a pivot as recited in claim 34, *i.e.*, the claim from which claims 14-16 depend. The PCT Application similarly fails to teach or suggest this limitation and Kumada fails to cure this deficiency. Accordingly, as the combination of PCT Application and Kumada fails to teach or suggest each limitation of claim 34, it can not be used to preclude patentability of claims

dependent thereon under 35 U.S.C. § 103(a). For these reasons, Applicants earnestly solicit a withdrawal of the rejection of claims 14-16 under § 103(a).

5. Double Patenting Rejections

The Examiner rejects claims 1 and 34 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over: (a) claim 1 of U.S. Patent No. 6,031,926; (b) claims 1 and 6 of U.S. Patent No. 6,144,746; and (c) claims 1 and 3 of U.S. Patent No. 6,307,942. For each reference, the Examiner asserts that the claims are similar in scope "with obvious wording variations." Applicants traverse each of these rejections on the same ground: the Examiner has not satisfied his burden under M.P.E.P. § 804(II)(B)(1) which provides (with bold emphasis added):

> A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite,* 379 F.3d 594, 154 U.S.P.Q. 29 (CCPA 1967). **Therefore, any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. 103 obviousness determination.** *In re Braat,* 937 F.2d 589, 19 U.S.P.Q.2d 1289 (Fed. Cir. 1991); *In re Longi,* 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985).

The Examiner's assertion that the claims are similar in scope "with obvious wording variations" fails to satisfy the § 103(a) analysis required by M.P.E.P. § 804(II)(B)(1), *i.e.,* the Examiner has failed to show that where every element is not present, there is an inherent motivation taught within the reference to yield that which is claimed in this application. Accordingly, should the Examiner restate these rejections with the proper support in a future office action, Applicants respectfully request that the office action be made non-final.

CONCLUSION

For the reasons stated above, claims 1, 3, 5-27, and 33-39 are now in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Respectfully submitted,

July 10, 2002
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Paragraph **[0066]** of the published application (which corresponds to the paragraph starting on page 14, line 10 and ending on page 14, line 14 of the original application).

[0066] Figure 6c is an embodiment of loudspeaker 5 very similar to that of Figure 6b and comprising an exciter system having an opposed pair of inertial masses [24] 34 and exciters 8 on opposite sides of the panel to reinforce and thus increase the drive and thus the loudness.

Paragraph **[0079]** of the published application (which corresponds to the paragraph starting on page 17, line 20 and ending on page 18, line 8 of the original application).

[0079] An alternative embodiment of inertial torsional electrodynamic motor vibration exciter 12 which reduces shear in the coil former is shown in Figures 18 to 21 in which a coil 20 is mounted on a cylindrical former tube 19 to form a rotor. By winding the coil 20 along a tubular former [10] 19, the effects of shear are reduced. A flexible printed circuit 29 could also form the windings, and which is subsequently wrapped around the coil 20 as shown in Figures 21a and 21b. PADDICK, U.S. Patent 5,446,979 shows such a method for conventional circular voice coils, but in the present application we propose to wind the conductor along the length of the tubular former. The magnetic system 18 is formed by a permanent magnet 21, connected to outer pole pieces 24, forming a North Pole and South Pole whilst a central cylindrical pole 22 is held in place on the magnet 21 by a non-magnetic spacer 23.

IN THE CLAIMS:

34. (Amended) A loudspeaker comprising:

a panel-form member mounted on a suspension; and

a vibration [exciter] exciting system mounted on the panel-form member;

the vibration exciter being adapted to apply bending wave energy to the panel-form member and cause resonance, thereby producing an acoustic output;

wherein the suspension acts as a pivot, thereby supporting the panel-form member in a simple fashion and causing nodal lines corresponding to the resonance of the panel-form member to move towards an edge of the member as compared to a generally corresponding but resiliently or freely edge-suspended panel-form member;

the vibration exciter being positioned so as to bridge across several of said nodal lines.